IoT Clusters Platform for Data Collection, Analysis and Visualization

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The Internet of Things (IoT) popularity leads more scientists and students to research this field. IoTs have an efficient way of monitoring complex infrastructure systems and the environment around them. Thus, they intervene in several areas such as health care, engineering, or monitoring the effects of climate change. IoT's primary function is to collect data and share them with a distant server through the internet or a private network. Research on IoTs is firstly about creating efficient light devices composed of sensors that follow rigorous security protocols to guarantee the integrity of the data from the collection to its final destination. Secondly, the challenge is to store the data on a secure platform accessible by competent people for its analysis and visualization. The next generations of IoT devices will have to pass through multiple tests to satisfy collection, transmission, and storing challenges. Our research implementation provides a physical system allowing users to set and configure sensors on Raspberry Pis or Arduinos for data collection, a secure data transfer using APIs, and a cloud base storing space for visualization and analysis. The objective is to make research on IoT devices easier by providing a ready-to-use platform that allows research teams to focus on developing and testing new devices. Also, it offers real-time visualization of collected data via a web bases application and an adequate database for future analysis. Our platform aims to help students conduct IoT research projects or provide a complete database to those interested in data science on various sensors or IoT devices.